




# First record of a *Tamandua tetradactyla* with a chromatic anomaly in a periurban wetland, Mburucuyá, Corrientes, Argentina

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## Resumen

La coloración en mamíferos cumple funciones biológicas clave, como el camuflaje y la comunicación. Las anomalías cromáticas son condiciones genéticas raras que se reportan cada vez más en mamíferos silvestres gracias a los avances en la tecnología de cámaras trampa y la ciencia ciudadana. Reportamos el primer caso documentado de albinismo en *Tamandua tetradactyla* en Argentina, registrado en Mburucuyá, provincia de Corrientes. Es el cuarto registro de este tipo en Sudamérica, sumándose a los reportes de Ecuador, Brasil y Paraguay. El individuo fue fotografiado por un ciudadano local en un área periurbana. A pesar de las posibles desventajas del albinismo, como una mayor vulnerabilidad a la depredación y a la radiación, casos previos sugieren que el comportamiento nocturno y críptico de *T. tetradactyla* puede mitigar estos efectos. Este hallazgo enriquece el conocimiento sobre la variación cromática dentro de los Xenarthros y destaca la importancia de la participación ciudadana en el monitoreo de la biodiversidad. Estudios futuros permitirán mejorar la comprensión de la dinámica poblacional y el estado de conservación de *T. tetradactyla* en el noreste argentino.

**Palabras clave:** Albinismo, Mamíferos, Noreste Argentino, Xenarthra.

## Abstract

Mammalian coloration has key biological functions such as camouflage and communication. Chromatic anomalies are rare genetic conditions which are increasingly reported in wild mammals due to advances in camera-trap technology and citizen science. We report the first documented case of albinism in *Tamandua tetradactyla* in Argentina, recorded in Mburucuyá, Corrientes Province. This represents the fourth such record in South America, including Ecuador, Brazil and Paraguay. The individual was photographed by a local citizen in a periurban area. Despite potential disadvantages of albinism, such as increased vulnerability to predation and radiation, previous

cases suggest that the nocturnal and cryptic behavior of *T. tetradactyla* may mitigate these effects. This finding enriches knowledge of chromatic variation within Xenarthra and highlights the importance of community engagement in biodiversity monitoring. Future studies will improve understanding the population dynamics and conservation status of *T. tetradactyla* in northeastern Argentina.

**Key words:** Albinism, Mammals, Northeastern Argentina, Xenarthra.

Mammalian coloration plays various biological/ecological functions, including camouflage, physiological regulation, and intra/interspecific communication (Caro 2005). In this context, chromatic anomalies are rare genetic conditions that may partially or totally affect the skin, hair and eyes pigmentation, and are usually related to an overproduction or deficiency of melanin or other pigments (Caro 2005; Cotts et al. 2023, 2024). Regarding wild mammals, chromatic anomalies (albinism, leucism and melanism, among others) are quite rare within a population. However, their reports have significantly increased over the last years due to a wider implementation of camera-trap sampling techniques, greater tendencies towards community participation and citizen science in ecological studies, and the massification of smartphones, digital cameras and social networks (Gallo et al. 2023).

Within mammals, Xenarthra (magnaorder) is a peculiar clade of placental mammals endemic to the Americas, and one of the most characteristic components of the current mammal community of the South American Neotropical region (McKenna & Bell 1997; Nigro et al. 2021). It includes two major clades (orders): Cingulata, which includes all armadillos; and Pilosa, which gathers suborder Phyllophaga (sloths) and suborder Vermilingua (anteaters) (Gibb et al. 2016; Superina & Abba 2020; Nigro et al. 2021). Representatives of Vermilingua are characterized for developing very specialized anatomical features such as an elongated cranium, a slender mandible and a complete absence of teeth, which are the result of a long evolutionary adaptation to a myrmecophagous diet, including ants, termites and bees (McDonald et al. 2008; Nigro et al. 2021).

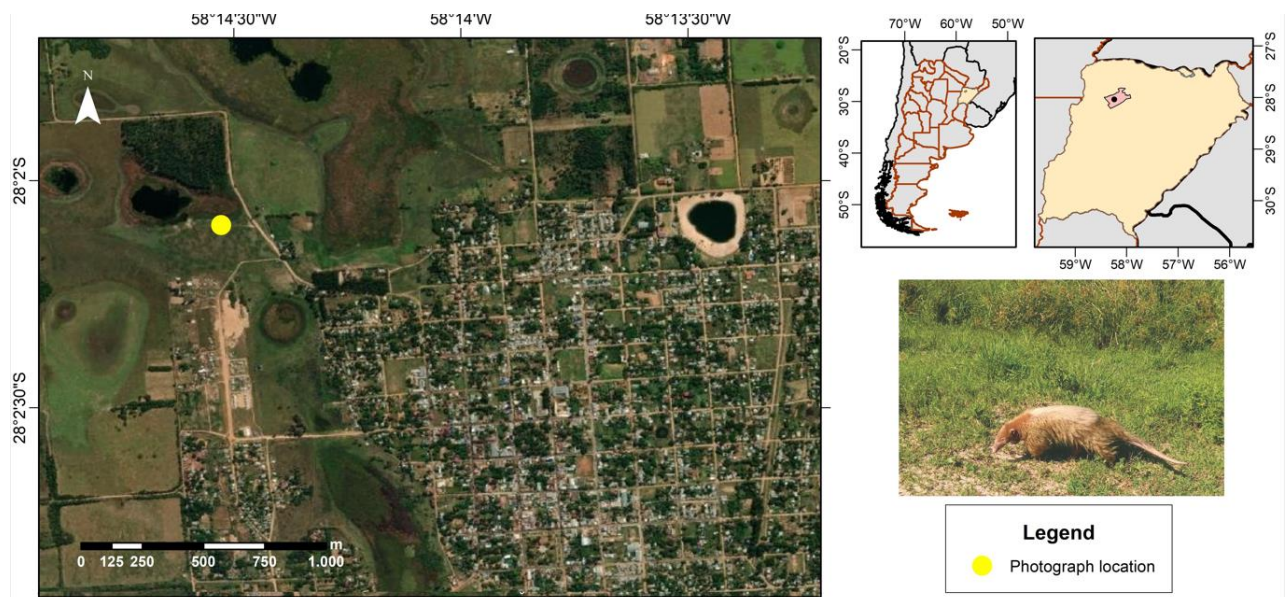
Living Vermilingua gather three genera: *Cyclopes* (Pygmy anteaters), *Myrmecophaga* (giant anteaters) and *Tamandua* (collared anteaters) (Miranda et al. 2018). From them, *Tamandua* includes *T. mexicana* (northern Tamandua), distributed from southeastern Mexico through Central America to Northwestern South America (More et al. 2021), and *T. tetradactyla* (southern Tamandua) distributed over a wide geographic range in South America, from Venezuela and Colombia to northern Argentina and Uruguay, occupying diverse habitats including tropical forests, savannas, and dry woodlands (Hayssen 2011; Nigro et al. 2021).

*T. tetradactyla* is a medium-sized anteater, larger than *Cyclopes* but smaller than *Myrmecophaga*, characterized by an elongated rostrum with a toothless snout, small eyes and ears, powerful forelimbs with four clawed digits and a prehensile tail. This species is a medium sized terrestrial mammal, with body masses ranging from 3.6 to 6 kg. It exhibits diurnal-crepuscular and nocturnal activity patterns, and is primarily adapted to an arboreal lifestyle, although it is also skilled at digging into ant and termite nests of various sizes in search of food (Gardner 2005, 2008; Hayssen 2011).

Regarding its conservation status, it is catalogued as Least Concern (LC) on the International Union for Conservation of Nature (IUCN) Red List (Molina et al. 2025). However, in Argentina, despite its broad distribution along the central-northern region, with records in 14 provinces including 21 protected natural areas, is classified as Near Threatened (NT), due to low-density populations which have declined over the last 15–20 years (Varela et al. 2019; Nigro et al. 2021). The most relevant threats for this species include wildfires, loss and

fragmentation of forested habitats, roadkills (particularly during the mating season, when individuals spend more time on the ground), predation and attacks by domestic dogs, and poaching (Varela et al. 2019; Nigro et al. 2021).

In this contribution, we report a new individual of *T. tetradactyla* affected by a chromatic anomaly, recorded in the area of Mburucuyá (-28,03480, -58,24208, 69 m.a.s.l., WGS84), Corrientes Province, Northeastern Argentina (Figure 1). Mburucuyá is settled within a wide geomorphological unit known as Paraná mega alluvial fan, which defines its morphometric features (Smichowski et al. 2022), characterized by shallow lakes which rely exclusively on local rainfall (Contreras & Contreras 2017,2018). The region has a humid subtropical climate (Kottek et al. 2006), with warm summers, mild to cool winters, and abundant precipitation. For seven months of the year, average temperatures exceed 20°C, while they range between 10-20°C during the remaining months, and annual average precipitation exceeds 1300 mm (APN 2019).



**Figure 1.** Geographical location of the record of the *T. tetradactyla* here analyzed in the periurban area of Mburucuyá, Corrientes Province, Argentina.

The analyzed individual of *T. tetradactyla* (Figure 2) was recorded on the 10th of November 2024 at 9h51 by a local citizen using a smartphone while having a walk around the margins of a circular peri-urban shallow lake in the surroundings of Mburucuyá. Our preliminary analysis of the photographs suggests that the individual is a healthy adult affected by a chromatic anomaly consistent with albinism. Albinism is a condition caused by a lack of melanin pigment. It is most easily recognized by the unusual coloration of the skin, hair or eyes (Hiler 1983). While frequently mistaken for albinism, leucism is a distinct condition involving partial pigment loss due to the congenital absence of chromatophore cells in specific regions. Unlike true albinism, individuals with leucism typically retain normal coloration in the eyes, limbs, and tail (Van Grow 2021). The photographs did not allow us to determine the eye coloration, a common limitation in this type of records (More et al.

2021), but they clearly show a loss of pigmentation in the limbs and tail, so that we can confirm the albinism condition.

Albinism increases vulnerability to solar radiation and predation and may also reduce genetic diversity in local populations through decreased individual fitness (i.e., reduced visual capacity), reduced reproductive success, reproductive isolation, and/or inbreeding (Bolla et al. 2022; Gallo et al. 2023). However, though albinism tends to be particularly disadvantageous in arboreal species, the literature reports other records of *Tamandua* individuals with chromatic anomalies that successfully reached adulthood in healthy conditions (Bolla et al. 2022). In this respect, according to Araujo Xavier et al. (2010), the nocturnal habit and cryptic behavior of the species may help mitigate these effects on individuals with chromatic anomalies. However, within *Xenarthra*, chromatic anomalies are often recorded in *Pilosa* (sloths and anteaters) (Table 1), while they are rare in *Cingulata* (armadillos), despite most armadillo species being nocturnal. In this regard, Gallo et al. (2023) proposed that this might be related with differences in the reproductive behaviour between *Pilosa* and *Cingulata*.



**Figure 2.** Adult individual of *T. tetradactyla* affected with albinism. a, note the lack of pigmentation in limbs and tail. b, the surrounding grassland belongs to the periurban area of Mburucuyá.

**Table 1.** Albinism recorded in *Pilosa* (sloths and anteaters).

Orden	Species	Country	Reference
	<i>Bradypus variegatus</i>	Brasil	Araujo Xavier et al. 2010
	<i>Tetradactyla mexicana</i>	Perú Panamá	More et al. 2021 Fuentes et al. 2024
Pilosa	<i>T. tetradactyla</i>	Paraguay Brasil y Ecuador	Ríos et al. 2019 Bôlla et al. 2022
	<i>Myrmecophaga tridactyla</i>	Brasil	Bôlla et al. 2022 Cotts y Serodio Prestes 2022 Attias et al. 2023

In summary, this represents the first documented case of an albino specimen of *T. tetradactyla* in Argentina, and the fourth recorded in South America, following previous

reports in Ecuador, Brazil and southwestern Paraguay (Ríos *et al.* 2019; Bolla *et al.* 2022). Future studies in the area are expected to provide additional insights into the tamandua population of Mburucuyá.

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